

ABSTRACT

A chemical vapor deposition (CVD) system comprises a tubular furnace, at least one BTBAS supply piping line connected to a base portion of the tubular furnace, an exhaust piping line connected to an upper portion of the tubular furnace, a bypass line connecting the BTBAS supply piping line with the exhaust piping line, and a vacuum pump connected to the exhaust piping line, wherein the bypass line is initially interrupted. A batch of wafers is placed into a tube of the tubular furnace. Nitrogen-containing gas and carrier gas are flowed into the tube. BTBAS is flowed into the tube through the BTBAS supply piping line. A silicon nitride deposition process is then carried out in the tube to deposit a BTBAS-based silicon nitride film on the wafers. Upon completion of the silicon nitride deposition process, the BTBAS supply piping line is blocked and the initially interrupted bypass line is opened.